

**REMARKS**

**I. Status of Claims**

Claims 1-10 are pending in the application.

Claim 7 is amended. Support for the amendment to claim 7 can be found at least in the working examples of the present specification and Fig. 2.

No new matter is added.

Entry of the Amendment is respectfully requested.

**II. Response to Claim Rejections Under 35 U.S.C. § 102**

Claims 6 and 7 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,178,806 to Isao Watanabe.

**A. Patentability of claim 6**

Applicants respectfully traverse the § 102 rejection of claim 6 based on Watanabe.

Two important features of present claim 6 are:

(a) in a disposition step, the elastic seal member is disposed inside the tubular metallic member so that a portion of the elastic seal member protrudes outward from a rear end of the tubular metallic member; and

(b) a crimping step is performed under a condition where a space between the rear end of the tubular metallic member and the outer circumferential surface of the elastic seal member is larger than a space between an inner circumferential surface of a portion to be crimped of the tubular metallic member and the outer circumferential surface of the elastic seal member.

See also Figs. 5 and 6 of the present specification.

The method having the features described above enables the production of a gas sensor

capable of preventing lead wires from being damaged when being sharply bent leftward or rightward for connection with an external device and the elastic seal member from being damaged when the elastic seal member is thermally expanded during use.

In contrast, Watanabe does not disclose the above features of the present invention. Namely, in Figs. 13, 14 and 18 of Watanabe a space between an elastic seal member and an outer metallic tubular member is shown, but such a space does not teach or suggest the above described feature (b) of the present invention. Furthermore, Figs. 13, 14 and 18 of Watanabe show the completed conditions of the sensor, i.e., the conditions after crimping. In contrast, the condition referred to in claim 6 of the present application is the condition of the sensor before crimping.

In view of the above, Watanabe does not disclose each and every element of present claim 6, and thus claim 6 is patentable over Watanabe.

**B. Patentability claim 7**

Two important features of amended claim 7 are:

- (a') a space is provided between the rear end of the tubular metallic member and the outer circumferential surface of the elastic seal member; and
- (b') a portion of the elastic seal member protrudes outward from the rear end of the tubular metallic member.

The gas sensor having the above described features of claim 7 can produce substantially the same effect of protecting lead wires and elastic seal members from damage as described with respect to method claim 6.

In contrast, although in Fig. 13 of Watanabe, the seal member 2 is adapted to protrude from the inner tubular member 13, there is no space provided between the seal member 2 and

the inner tubular member 13. In the arrangement described in Watanabe, the rear edge of the inner tubular member 13 is inevitably brought into contact with the seal member 2, particularly under high temperature conditions, causing damage to the seal member 2. Further, although in Figs. 13 and 18 of Watanabe, a space is provided between the seal member 2 and the outer tubular member 12, the seal member 2 is not adapted to protrude from the rear end of the outer tubular member 12. In the arrangement described in Watanabe, the lead wires 16 and 18 can be brought into contact with the rear edge of the outer tubular member 12, thereby causing damage to the lead wires when the wires are sharply bent leftward or rightward for connection with an external device.

Therefore, Watanabe does not teach or suggest the above described elements of claim 7, and claim 7 is patentable over Watanabe.

In view of the above, Applicants respectfully request reconsideration and withdrawal of the § 102 rejections of claims 6 and 7 based on Watanabe.

### **III. Response to Claim Rejections Under 35 U.S.C. § 103**

Claims 1, 3-4 and 8-9 were rejected under 35 U.S.C. § 103 (a) as being unpatentable over Watanabe, in view of U.S. Patent Application Publication No. 2003/01502545 to Yasuhiro Fujita.

An important feature of method claim 1 is that in a disposition step, the elastic seal member is disposed so that a part of the smaller diameter portion protrudes outward from the rear end of the tubular metallic member. By this method, in the gas sensor obtained or produced, the smaller diameter portion of the elastic seal member is disposed astride the rear end of the outer

tubular member, while at the same time a space is formed between the smaller diameter portion of the elastic seal member and the rear end of the tubular metallic member.

The gas sensor having the above feature can produce substantially the same effect of preventing damage to lead wires and elastic sealing members as described with respect to claim 6.

In contrast, Watanabe does not disclose a seal member having such a smaller diameter portion. Furthermore, the seal member 11 of Fujita does not have a smaller diameter portion equivalent to that of the present invention. Namely, the protruding portion 13 of the seal member 11 of Fujita is not constructed and arranged so as to be disposed partly inside the tubular metallic member 6 and partly outside the tubular metallic member 6, i.e., partly protruding from the rear end of the tubular metallic member 6. Additionally, as is apparent from Fig. 2 of Fujita, such a protruding portion 13 cannot prevent the lead wires 21 and 22 from directly contacting the rear edge of the tubular metallic member 6 if bent sharply leftward or outward for connection with an external device, because the protruded portion 13 is provided not for protection of the lead wires 21 and 22 but for disposition of the insertion member 30 and filter 40. Finally, the protruding portion 13 is not disposed astride the rear end of the tubular member 6 and not constructed and arranged so as to provide a space between its outer circumferential surface and the rear end of the tubular metallic member 6.

Accordingly, the subject matter of claim 1 is neither taught nor suggested by a combination of Watanabe and Fujita and claim 1 is patentable over the combination of Watanabe and Fujita. Claims 3 and 4 are also patentable, at least by virtue of their dependence from claim 1.

Claims 8-9 are patentable, at least by virtue of their dependence claim 7, and because

Fujita does not cure the deficiencies of Watanabe with respect to claim 7, as discussed with respect to the § 102 rejection of claim 7 based on Watanabe.

In view of the above, Applicants respectfully request reconsideration and withdrawal of the § 103 rejections of claim 1, 3-4 and 8-9 based on Watanabe in view of Fujita.

**IV. Allowable Subject Matter**

Applicants thank the Examiner for indicating that the subject matter of claims 2, 5 and 10 are allowable.

Claims 2, 5 and 10 are objected to as being dependent on a rejected base claim.

Applicants respectfully submit that claims 2, 5 and 10 are still in condition for allowance, at least by virtue of their dependence from claims 1 and 7, and the patentable subject matter of claims 1 and 7, as discussed above.

Therefore, reconsideration and withdrawal of the objection to claims 2, 5 and 10 is respectfully requested.

**Conclusion**

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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Respectfully submitted,



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